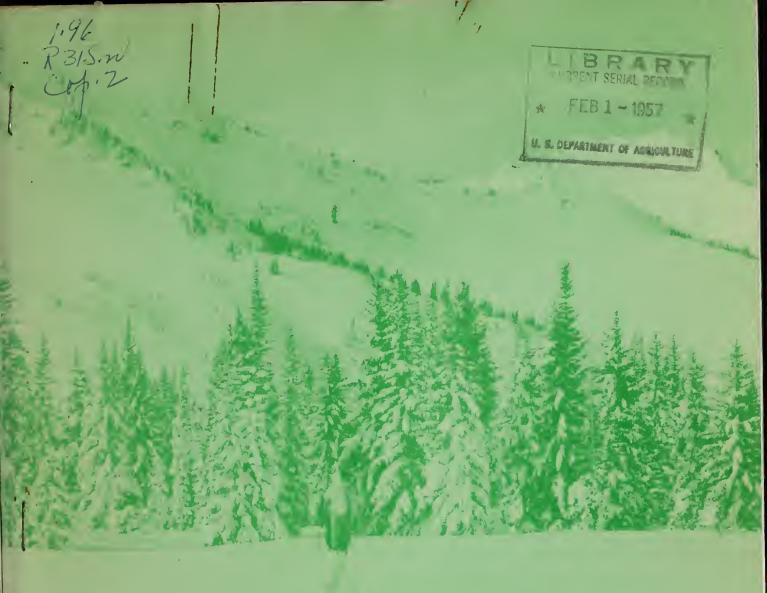
Historic, Archive Document

Do not assume content reflects current scientific knowledge, policies, or practices.





FEDERAL-STATE COOPERATIVE
SNOW SURVEYS and WATER SUPPLY FORECASTS
for

ARIZONA

UNITED STATES DEPARTMENT of AGRICULTURE SOIL CONSERVATION SERVICE

Nata included in this report were obtained by the agency named above in cooperation with the Federal, State and local organizations listed on the last page of this report.

JAN. 15, 1957

UNITED STATES DEPARTMENT OF AGRICULTURE SOH, CONSERVATION SERVICE

TO RECIPIENTS OF COOPERATIVE SNOW SUBVEY AND WATER SUPPLY FORECAST REPORTS:

Snow surveys in the west are conducted each year at more than 1200 snow courses. Basin and Province or State snow survey reports summacrizing the results of the measurements and forecasts of seasonal runoff and water supply are issued by the Soil Conservation Service, U. S. Department of Agriculture and some of its coperators; the Water Rights Branch of the British Columbia Department of Lands and Forests; and the California Division of Water Resources.

Copies of the various federal-state cooperative snow survey reports listed below may be secured by writing to:

Head, Water Supply Forecasting Section Soil Conservation Service 209 S. W. 5th Avenue Portland 4, Oregon

BASIN REPORTS:

	Issued monthly February through May by SCS and Colorado Experiment Station, Fort Collins, Colorado.*
Columbia River Basin	Issued monthly January through May by Soil Conservation Service, Boise, Idaho.*
	Issued monthly February through May by SCS and Montana Agricultural Experiment Station, Bozeman Montana.*
West-Wide Water Supply Outlook	Issued April 1 by Soil Conservation Service and Cooperators, Portland, Oregon.

STATE REPORTS:

Arizona	Issued semi-monthly January 15 through April 1 by SCS and Salt River Valley Water Users Association, Phoenix, Arizona.*
Nevada	Issued monthly February through April by SCS and Nevada State Engineer, Reno, Nevada.*
Oregon	Issued monthly January through May by SCS, Portland, Oregon, and Oregon Agricultural Experiment Station.*
Utah	Issued monthly January through May by SCS, Salt Lake City, Utah, and State Engineer of Utah and Utah Agricultural Experiment Station.*
Washington	Issued monthly February through May by SCS, Spokane, Washington, and State Department of Conservation and Development.*
Wyoming	Issued monthly February through May by SCS, Casper, Wyoming, and State Engineer of Wyoming.*

^{*}Special reports are issued as needed.

The British Columbia reports are issued February 1 through June 1 and may be secured from Comptroller, Water Rights Branch, Department of Lands and Forests, Parliament Building, Victoria, B. C.

The California reports are issued monthly February 1 through May 1 and may be secured from Division of Water Resources, California Department of Public Works, Sacremento, California.

The annual water supply forecasts of the Weather Bureau are available in monthly bulletins published from January through May. These bulletins entitled, "Water Supply Forecasts for the Western United States" may be obtained from River Forecast Center, Weather Bureau, 712 Federal Office Building, Kansas City 6, Missouri.

COOPERATIVE SNOW SURVEYS and WATER SUPPLY FORECASTS

for

ARIZONA

(Salt, Verde, Gila and part of Lower Colorado River Basin)

Issued

January 15, 1957

Report Prepared

by

George Watt, Snow Survey Supervisor Soil Conservation Service 39 North Sixth Avenue Phoenix, Arizona

Issued by

Salt River Valley Water Users' Association

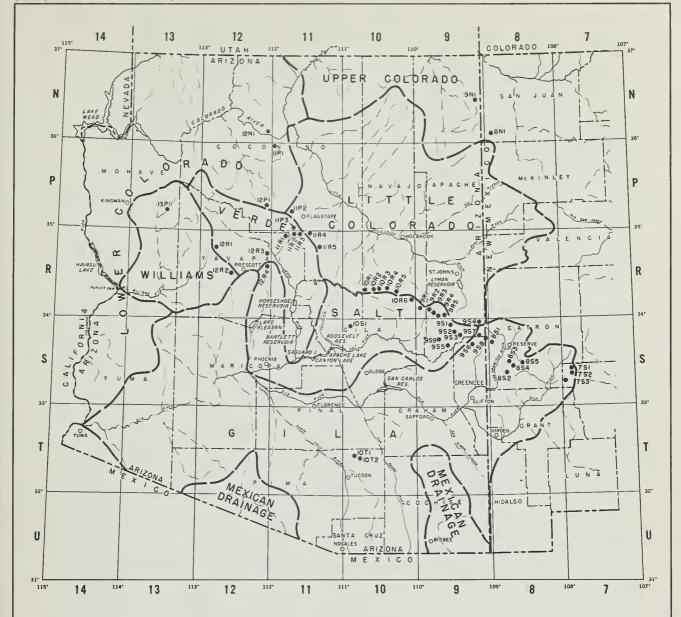
and

Soil Conservation Service

Robert V. Boyle State Conservationist

Victor I. Corbell President Soil Conservation Service Salt River Valley Water Users! Assn.





LEGEND

DRAINAGE BASIN BOUNDARY
13U2 SNOW COURSE

ARIZONA COOPERATIVE SNOW SURVEYS

SNOW COURSES AND DRAINAGE BASINS
JANUARY 1956



INDEX TO SNOW COURSES

NUMBER	* NAME	SEC	TWP	RGE**	ELEVATION	RIVER BASIN
11-P-3	Antelope Park	29	19N	8E	7300	Verde Discontinued
9-5-1	Baldy (p)	28	7N	27E	9000	Salt-Little Colorado
10-T -1	Bear Wallow	6	125	16E	8100	Gila
9-5-6	Beaver Head	13	4N	30E	8000	Salt-Frisco
9 - S -3	Big Lake Knoll	2	5N	28 E	8800	Salt-Frisco-Little Colorado Discontinued
7-S -3	Black Canyon	8	135	11W***	6790	Gila
12-N-1	Bright Angel	34	33N	3E	8400	Lower Colorado
12-R -1	Camp Wood	3	16N	6W	5700	Williams-Verde
10-R -3	Canyon Creek (s)	18	11N	15E	7500	Salt
11-R -2	Casner Park (s)	19	18N	8E	6950	Verde
12-P-1	Chalender (s)	27	22N	3E	7100	Verde
8-5-3	Corner Mountain	7	10S	17W***	8850	Gila-Frisco
9-5-9	Corn Creek (p) Lat	.3304	5'N. Lor	ig.109 ⁰ 45'V	V.§ 7730	Salt
9-S-7	Coronado Trail	26	5N	30E	8000	Salt-Frisco
10-R -2	Elk	31	11N	14E	7600	Salt-Little Colorado Discontinued
10-R -6	Forest Dale (s)	2	9N	21E	6000	Salt-Little Colorado
11-P-2	Fort Valley	22	22N	6E	7350	Verde #
9-R -5	Ft. Apache	18	7N	27E	9160	Salt-Little Colorado
8-5-1	Frisco Divide	31	6S '	20W***	8000	Frisco-Gila
12-R-4	Gaddes Canyon	11	15N	2E	7600	Verde #
10-R -5	Gentry	36	11N	15E	7600	Salt-Little Colorado
11-P-1	Grand Canyon	21	30N	4E	7500	Lower Colorado
11-R-5	Happy Jack	30	17N	9E	7630	Verde
10-R -4	Heber (p)	28	11N	15E	7600	Salt-Little Colorado
7-S-2	Inman	6	115	10W***	7800	Gila
12-R -2	Iron Springs	22	14N	3W	6200	Williams-Verde
9-5-2	Maverick Fork (s)(p	013	6N	27E	9050	Sait-Little Colorado
9-R -4	McKay Peak	13	7N	24E	8250	Salt Not read
9-R -2	McNary (s)	14	8N	23E	7200	Salt-Little Colorado
9-R-1	Milk Ranch	28	8N	23E	7000	Salt
12-R-3	Mingus Mountain	3	15N	2E	7100	Verde #
8 - S-2	Mogollon	2	115	19W***	7000	Frisco-Gila
11-R-4	Mormon Lake	13	18N	8E	7350	Verde #
11-R-3	Mormon Mountain(s		18N	8E	7500	Verde
11-R-1	Munds Park (s)	7	18N	7E	6500	Verde
8-5-4	N-Bar Lake	16	105	17W***	8600	Gila
0-3 1	14 Dai Luke	10	103	17 11	0000	
8-S -5	Negrito	6	105	16W***	8200	Gila
	Nutrioso		6N		8500	Salt-Frisco-Little Colorado
9-5 -5				averick, Ar		Salt
9-N-1	Roof Butte	15	8N	6W****	8500	Little Colorado # Not read
10-T -2	Rose Canyon	1.5	125	16E	7300	Gila
9-5 -8	State Line	6	6\$	21W***	8000	Gila-Frisco
7-S -1	Taylor Creek	20	105	10W***	7850	Gila
9-R -3	Trout Creek	5	7N	24E	6400	Salt Not read
8-N-1	Washington Pass La	rt. 3600	5'N. Lor	ng.108°50'V	V. § 8600	Little Colorado / Not read
13-P -1	Willow Ranch	16	21 N	11W	5000	Williams
10-R -1	Woods Canyon	15	11N	13E	7640	Salt-Little Colorado Discontinued
10-K-1	Workman Creek	33	6N	14E	6900	Salt
10-3-1	HOININGH CIECK	00	014	TTL	0,00	0411

^{*} Number indicates location of course within coordinate rectangle, thus 9-N 1 is Course #1 in coordinate rectangle 9-N.

** All in Gila and Salt River Base and Meridian except where otherwise indicated.

*** New Mexico Principal Meridian.

**** Navajo Base.

On adjacent drainage.

(s) Soil Moisture Station installed on or in vicinity of course.

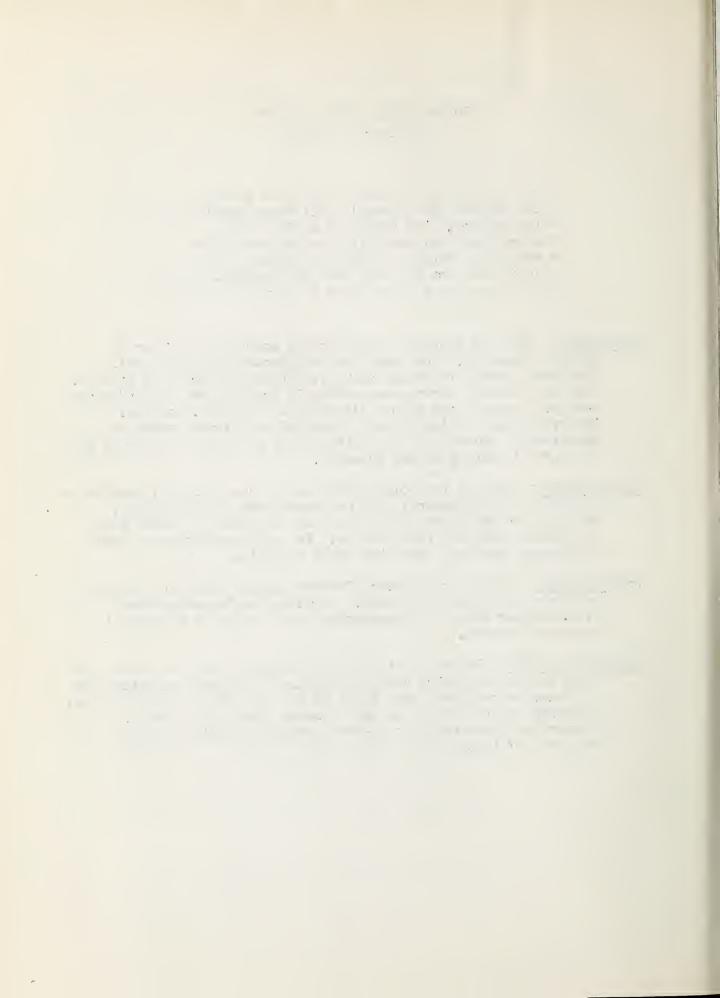
§ Unsurveyed.

(p) Storage gage installed on or in vicinity of course

ARIZONA WATER SUPPLY OUTLOOK January 15, 1957

- SNOW COVER: Snow was reported on only three courses out of the 32 courses reporting. The snow line is approximately 8500 feet. The three courses reporting snow were about 70 percent of average. The early January storms came mostly in the form of rain and added snow pack only in the higher elevations. They did, however, improve the soil moisture conditions and add storage water to the reservoirs. Normally at this time of the year over 50 percent of the winter's snow pack has occurred.
- SOIL MOISTURE: Most of the soil moisture units show the soil profile to be close to field capacity but no excess water or saturation.

 Units by the Chalender and Forest Dale Snow Courses showed some dry soil in the four foot profile. The soil under the snow pack area showed somewhat less than field capacity.
- PRECIPITATION: Fall precipitation (October through December) has been below normal through the state. A random sample of thirteen U. S. Weather Bureau Stations shows their totals to be only 31 percent of normal.
- RESERVOIRED WATER: The water storage in Arizona is extremely low. The total storage in twelve important reservoirs is only 64 percent of a 15-year average and about equal to this date last year. However, excluding the reservoirs on the Colorado River, the water in storage is 42 percent of a 15-year average and only 46 percent of last year at this date.



STATUS OF RESERVOIR STORAGE - JANUARY 15, 1957

			USABLE	STORAGE -	1000 ACRE	FEET
BASIN and/or STREAM	RESERVOIR	USABLE CAPACITY 1000s AF	1957	1956	1955	15-Year Average 1928-52
Agua Fria	Lake Pleasant 1/	163.8	11.5	28.0	24.0	18.9
Colorado	Lake Havasu 1/	688.0	611.9	597.6	609.7	554.5
Colorado	Lake Mohave 1/	1,810.0	1,572.1	1,552.0	1,721.5	1,380.0
Colorado	Lake Mead	27,207.0	11,870.0	11,332.0	12,508.0	19,832.0
Gila	San Carlos	1,205.0	5.1	69.0	33.9	144.2
Verde	Bartlett 1/	180.0	27.2	69.0	46.9	38,1
Verde	Horseshoe 1/	143.0	36.4	2.9	2.2	13.2
Salt	Roosevelt	1,381.6	84.6	211.2	570.2	397.1
Salt	Apache	245.1	82.0	241.8	177-4	168.3
Salt	Canyon	57.8	53.7	56.6	18.7	26.1
Salt	Saguaro	69.8	44.7	66.2	51.8	16.2
Little Colorado	Lyman <u>l</u> /	30.6	0.0	7.9	1.5	7.4
Little Colorado	Show Low Lake 1/	5.1	1.3	1.2	100 on 400 sab	ton 400 tod

^{1/}Average is for less than 15 years of record in the 1938-52 period. 2/As of January 7, 1957.

v .

SUMMARY OF JANUARY 15, 1957 SNOW SURVEYS AND COMPARISON OF DATA WITH THAT OF PREVIOUS YEARS BY WATERSHED

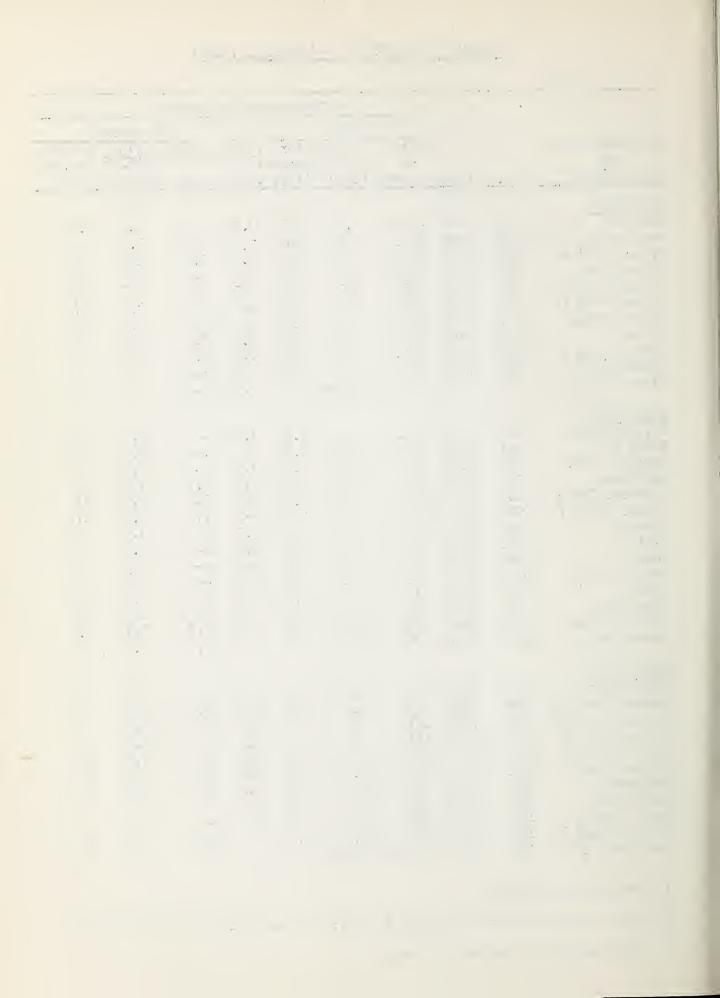
	No. of Courses	Snow Depth						1957 Water Content in	
WATERSHEDS	in Average	1957 Inches	1957	1956	1955	1938-52 Average			ent of Average
Gila River	6	0.0		0.0	0.0	2.6			
		0.0	0.0	0.0	2.0	1.6	600 via 100		00 00 00
Salt River	13	2.0	0.8	0.6	1.2	2.8	33	130	29
Verde River	9	0.0	0.0	0.0	2.0	2.9	449 Apr Apr	\$50 mm mag	
Williams River	1	0.0	0.0	0.0	5.9	1.3	40 40 40		
Lower Colorado River	2	0.0	0.0	0.0	2.9	3.0	600 day 100	000 and 600	100 000 000
Little Colorado River		1.0	0.5	0.3	0.9	2.9	50	167	17

				SNC	W COVER	R MEASU	REMENT	.s	
			-	1957	-	:	DA	ST RECOR	D.
DRAINAGE BASIN			Date		Water			ent (In.)	
and			of		Content		001100		Yrs. of
SNOW COURSE	No.	Elev.	Survey			:1956	1955	Average	
OTIA DIED								2/	
GILA RIVER Nutrioso	984	8500	7 /71.	0.0	~ ^	0 0	0 7		70
	934 10T1		1/14 1/14	0.0	0.0	0.0	2.7	1.9	17
Bear Wallow 3/ Frisco Divide	881	8100	1/14	0.0	0.0	0.0	3.9 3.1	2.4 1.7	9 17
State Line	9S8	8000	1/14	0.0	0.0	0.0	3.5	2.2	17
Coronado Trail	9S7	8000	1/14	0.0	0.0	0.0	3.0	2.7	17
Beaver Head 3/	986	8000	1/14	0.0	0.0	~~	1.9	2.6	17
Taylor Creek	751	7850	1/14	0.0	0.0	0.0	0.0	0.7	15
Inman	752	7800	1/14	0.0	0.0	0.0	0.0	0.6	10
Rose Canyon 3/	10T2	7300	1/14	0.0	0.0	0.0	2.1	0.7	9
Mogollon 3/	882	7000	1/14	0.0	0.0	0.0	1.0		4
Black Canyon 3/	7S3	6790	Report			0.0	0.0	que din	4
			-	Ť					
SALT RIVER		/-	- /- 1		. 0				_
Ft. Apache 1	9R5	9160	1/14	9.0	2.8	3.4	***	4.6	7
Baldy 1/	981	9125	1/14	8.0	2.7	T	QUI NO	4.5	7
Maverick Fork Nutrioso	952 954	9020 8500	1/14	14.5	4.7	3.7	2.7	5.9	7 17
Coronado Trail	9S7	8000	1/14	0.0	0.0	0.0 0.0	3.0	1.9 2.7	17
Beaver Head 3/	9S6	8000	1/14	0.0	0.0		1.8	2.6	17
Pacheta '	985	7800	1/15	0.0	0.0	0.0	1.7	3.8	7
Gentry	10R5	7600	1/13	0.0	0.0	0.0		2.2	7
Heber	10R4	7600	1/13	0.0	0.0	0.0		1.9	7
Canyon Creek	10R3	7500	1/13	0.0	0.0	0.0		2.2	7
McNary	9R2	7200	1/14	0.0	0.0	0.0	1.1	2.3	17
Milk Ranch	9R1	7000	1/14	0.0	0.0	0.0	0.9	1.3	16
Workman Creek	1081	6900	1/14	0.0	0.0	0.0	4.7	3.1	5
Forest Dale	10R6	6430	1/14	0.0	0.0	0.0	1.0	0.8	17
								1	
VERDE RIVER	3350	5/00	- /- -					0.1	,
Happy Jack	11R5	7630	1/15	0.0	0.0	0.0	~~	3.4	6
Gaddes Canyon 3/		7600	1/1/	0.0	0.0	0.0	3.9	1. 0	3 7
Mormon Mountain	11R3	7500	1/12	T T	T T	0.0	2 2	4.9	10
Mormon Lake 1/ Fort Valley 1/	11R4 11P2	7350 7 350	1/12 1/14			0.0	3.3 2.2	3.8 2.8	10
Mingus Mountain	12R3	7100	1/14	0.0	0.0	0.0	2.8	1.0	10
Chalender	12P1	7100	1/14	0.0	0.0	0.0	3.7	3.3	10
Casner Park	11R2	6930	1/12	0.0	0.0	0.0		3.6	7
Munds Park	11R1	6500	1/12	0.0	0.0	0.0		1.9	7
Iron Springs 1/	12R2	6200	1/14	0.0	0.0	0.0	5.9	1.3	11
Camp Wood 3/	12R1	5700		Delaye			2.5	1.1	11
			_						

^{1/} On adjacent drainage.

^{2/} All averages are for less than 15 years of record in the 1938-52 period.

^{3/} Not included in watershed average.



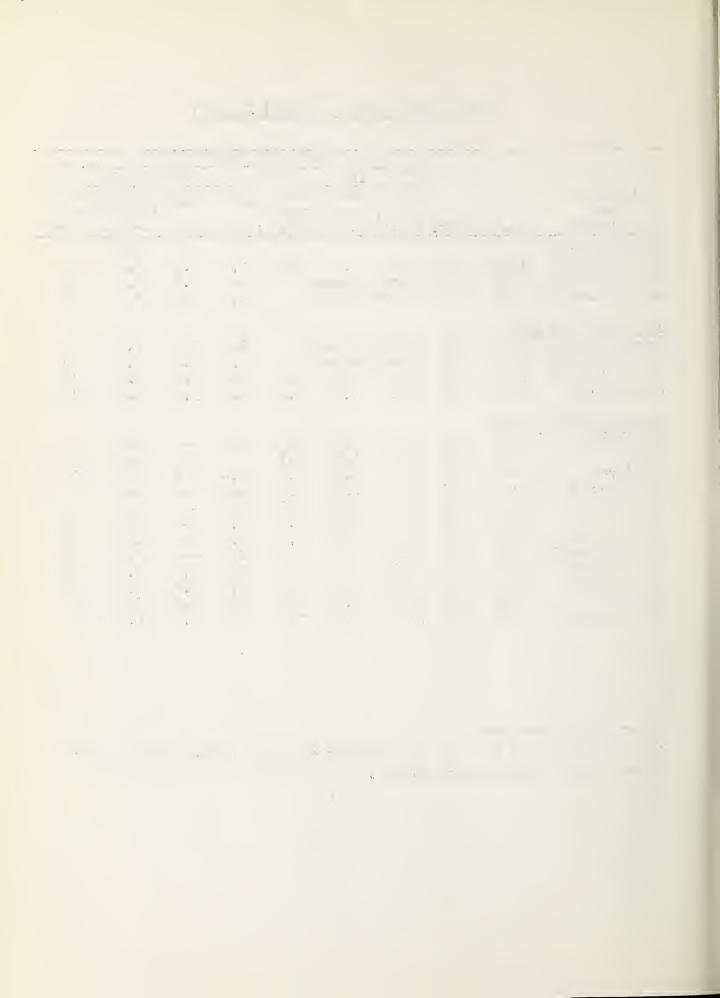
ARIZONA SNOW SURVEYS - JANUARY 15, 1957

		•		SN	OW COVE	ER MEASU	JREMENT	S	
				1957		:	PAST	RECORD	
DRAINAGE BASIN			Date		Water		Conten		Previous
and			of	Depth					Yrs. of
SNOW COURSE	No.	Elev.	Survey	(In.)	(In.)	:1956	1955	Average	Record
WILLIAMS RIVER								2/	
Iron Springs	12R2	6200	1/14	0.0	0.0	0.0	5.9	1.3	11
Camp Wood 1/3/ Willow Ranch 3/	12R1 13P1	5700 5000		Delaye		0.0	2.5 0.5	1.7	11
MITTOM Manch 5)	TOLI	5000	Report	Delaye	Œ	0.0	0.5	T • !	4.4
LOWER COLORADO R	IVER								
Bright Angel 3/	12N1	8400	Report	Delaye	d	2.1	1.8	7.6	9
Grand Canyon 3/	11P1	7500		Delaye		0.0	2.1	2.6	9
Fort Valley	11P2	7350	1/14	0.0	0.0	0.0	2.2	2.8	10
Chalender 1/	12P1	7100	1/14	0.0	0.0	0.0	3.7	3.3	10
LITTLE COLORADO	RIVER								
Ft, Apache	9R5	9160	1/14	9.0	2.8	3.4		4.6	7
Baldy	9S1	9125	1/14	8.0	2.7	T		4.5	7
Nutrioso	:984	8500	1/14	0.0	0.0	0.0	2.7	1.9	17
Happy Jack 1	11R5	7630	1/15	0.0	0.0	0.0		3.4	6
Gentry Heber	10R5 10R4	7600 7600	1/13 1/13	0.0	0.0	0.0		2.2	7 7
Canyon Creek	10R4	7500	1/13	0.0	0.0	0.0		1.9 2.2	7
Mormon Mountain	11R3	7500	1/12	Ť	Ť	0.0	-	4.9	7
Mormon Lake	11R4	7350	1/12	T	T	0.0	3.3	3.8	10
Fort Valley	11P2	7350	1/14	0.0	0,0	0.0	2.2	2.8	10
McNary	9R2	7200	1/14	0.0	0.0	0.0	1.1	2.3	17
Forest Dale	10R6	6430	1/14	0.0	0.0	0.0	1.0	0.8	17

^{1/}On adjacent drainage.

^{2/} All averages are for less than 15 years of record in the 1938-52 period.

^{3/} Not included in watershed average.



PRECIPITATION AT SELECTED ARIZONA STATIONS 1/

		Precipitatio		
STATION	Dec	cember - 1956		t Water-Year 56 - Dec. 1956)
	Total	Departure from long term mean	Total	Departure from long term mean
Ash Fork	•50	- •77	1.33	23
Clifton	•23	84	.83	- 1.45
Douglas Smelter	.17	54	•30	- 1.48
Flagstaff WBAS 2/	•39	- 1.47	1,12	- 3.09
Grand Canyon Hq.	1.05	46	2.14	98
Parker	T	68	.13	- 1,01
Payson Ranger Stati	ion 41	- 1.59	1.91	2.58
Phoenix WBAS 2/	.01	- .96	•07	- 1.77
Prescott WBAS 2/	.19	- 1.18	.70	- 1.97
Springerville	T	50	.21	- 1.37
Tucson WBAS 2/	.22	72	.49	- 1.68
Winslow WBAS 2/	T	- •53	•30	- 1.21
Yuma WBAS 2/	0	- •55	Т	- 1.01

Data and Analysis furnished by Paul C. Kangieser, Arizona State Climatologist, U. S. Weather Bureau, Phoenix, Arizona.

^{2/} WBAS = Weather Bureau Airport Station.

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LIST OF SNOW SURVEYORS

SNOW COURSE	SURVEYOR
Baldy	SCS and SRVWUA
Bear Wallow	A. F. Rea and J. R. Brinkley
Beaver Head	N. A. Josh
Black Canyon	Mr. Salyer
Bright Angel	Dee Bridges and George Epple
Camp Wood	Mrs. C. C. Merritt
Canyon Creek	SCS and SRVWUA
Casner Park	SCS and SRVWUA
Chalender	M. C. Oleson and T. A. Roll
Coronado Trail	J. D. McAdams
Forest Dale	R. E. Robinson, A. Valverde & R. Endfield
Frisco Divide	K. R. Weissenborn
Ft. Apache	SCS and SRVWUA
Fort Valley	Rocky Mt. Forest & Range Exp. Station
Gaddes Canyon	Richard Eng
Gentry	SCS and SRVWUA
Grand Canyon	J. Lynch
Happy Jack	Emil Ryberg
Heber	SCS and SRVWUA
Inman	C. H. McCauley
Iron Springs	Ernest Saxby
McNary	R. E. Robinson, A. Valverde & R. Endfield
Maverick Fork	SCS and SRVWUA
Milk Ranch	R. E. Robinson, A. Valverde & R. Endfield
Mingus Mountain	Richard Enz
Mogollon	J. R. Wray
Mormon Lake	SCS and SRVWUA
Mormon Mountain	SCS and SRVWUA
Munds Park	SCS and SRVWUA
Nutrioso	J. D. McAdams Fach Phillips
Pacheta	Foch Phillips A. F. Rea and J. R. Brinkley
Rose Canyon	K. R. Weissenborn
Taylor Creek	C. H. McCauley
Willow Ranch	Tiny Miller
Workman Creek	Rocky Mt. Forest & Range Exp. Station
	and a second and a second a second

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The following organizations cooperate in the Arizona snow survey work:

FEDERAL

Department of Agriculture:

Soil Conservation Service

Forest Service

Apache Forest
Coconino Forest
Coronado Forest
Gila Forest
Kaibab Forest
Prescott Forest
Rocky Mountain Forest and Range Experiment Station

Department of Commerce:
Weather Bureau
Arizona Section

Department of Interior:

Bureau of Reclamation Region III

Geological Survey
Arizona District

Bureau of Indian Affairs
Fort Apache Reservation

National Park Service Grand Canyon National Park

Gila Water Commissioner Safford, Arizona

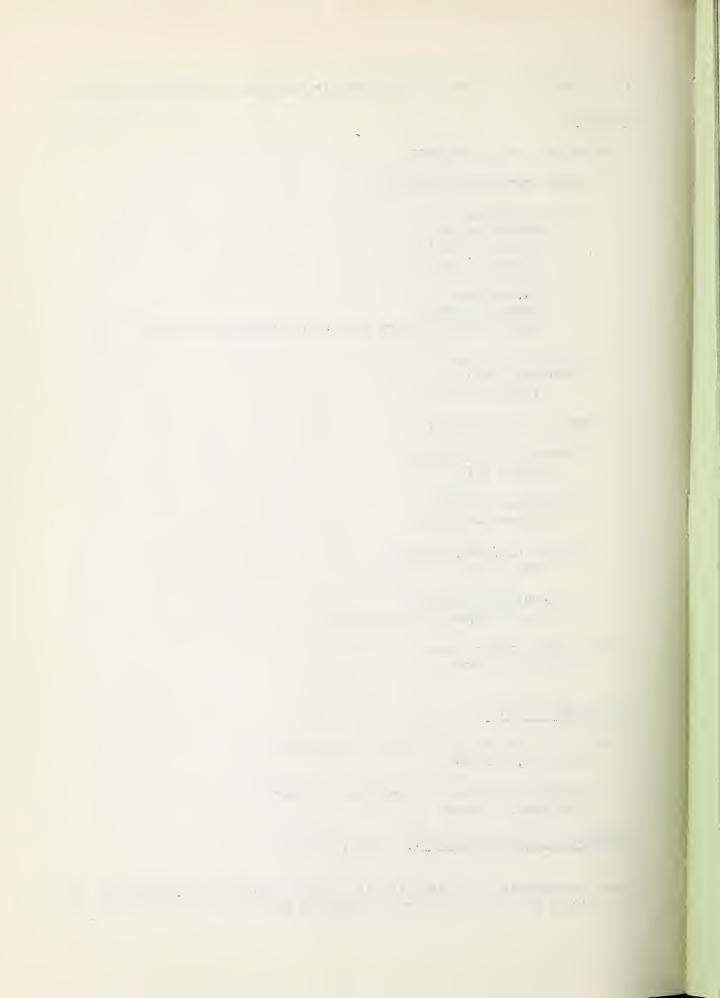
IRRIGATION PROJECTS:

Salt River Valley Water Users! Association Phoenix, Arizona

San Carlos Irrigation and Drainage District Coolidge, Arizona

SOUTHWEST LUMBER MILLS, INC., McNary, Arizona

Other organizations and individuals furnish valuable information for the snow survey reports. Their cooperation is gratefully acknowledged.





Federal - State - Private

COOPERATIVE SNOW SURVEYS

Furnishes the basic data necessary for forecasting water supply for irrigation, domestic and municipal water supply, hydro-electric power generation, navigation, mining and industry

"WATER IS THE WEST'S GREATEST RESOURCE"